



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,429	01/28/2005	Kevin R. Boyle	GB 020122	1451

24737 7590 07/03/2006

PHILIPS INTELLECTUAL PROPERTY & STANDARDS  
P.O. BOX 3001  
BRIARCLIFF MANOR, NY 10510

EXAMINER

MOE, AUNG SOE

ART UNIT PAPER NUMBER

2618

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/523,429	BOYLE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Aung S. Moe	2618	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____.  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>see attached</u> .  | 6) <input type="checkbox"/> Other: ____.                                    |

## **DETAILED ACTION**

### ***Specification***

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because the form and legal phraseology (i.e., comprises) often used in patent claims should not used in the abstract, please change "comprises" as recited in the abstract to - - includes - - . Correction is required. See MPEP § 608.01(b).

3. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.

Art Unit: 2618

- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (f) BACKGROUND OF THE INVENTION.**
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.**
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).**
- (i) DETAILED DESCRIPTION OF THE INVENTION.**
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).**
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).**
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).**

4. The disclosure is objected to because of the following informalities: it's noted that the specification of utility application should include the heading (f) – (j) as suggested above in the specification .

Appropriate correction is required.

#### ***Claim Objections***

5. Claims 5-7 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims 5-7 have not been further treated on the merits.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 3, 5-7 (for the purpose of examining, the examiner is assuming that claims 5 and 7 are depended on claim 1), 10 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Kemmochi et al. (U.S. 2004/0032706 A1).

Regarding claim 1, Kemmochi '706 discloses multi-mode radio module (i.e., noted the multi-mode radio module as shown in Figs. 4, 25, 26 and 34 of Kemmochi '706) comprising a terminal (i.e., note the terminal as shown in Figs. 3 and 34) for connection to signal propagating and receiving means (i.e., noted the Antenna as shown in Fig. 3 and 34), a transmitting branch (i.e., noted the transmission lines for EGSM, GSM and PCS as shown in Figs. 4, 26 and 34 of Kemmochi '706) coupled to the terminal (i.e., the Antenna as shown in Fig. 3, 25 and 34), and a branching circuit coupled to the terminal (i.e., as shown in Figs. 3, 4, 25, 26 and 34, the branching circuit for EGSM900 and GSM1800/PCS is coupled to the antenna),

the branching circuit comprising at least a first and a second branch for receiving signals in first and second frequency bands (i.e., noted the first and second branch for receiving EGSM900 and GSM1800/PCS frequency bands as shown in Figs. 3, 4, 25, 26 and 34), respectively, each of the first and second branches comprising, respectively, a phase shifting

Art Unit: 2618

circuit (i.e., noted the use of Phase shift circuit LG4, LD4, and Phase shifter 1 & 2 as shown in Figs. 4, 26 and 34 respectively), a band pass filter (i.e., noted the SAW/fg BPF as shown in Figs. 3, 4, 25, 26 and 34 respectively) coupled to the phase shifting circuit (i.e., noted LD4, LG4 or Phase shifter 1 & 2 of Figs. 4, 26 and 34), the bandwidth of the filter being selected to pass a wanted signal in one of the first and second frequency bands but reject an unwanted signal in the other of the second and first frequency bands (i.e., noted that the band passed SAW filter as shown in Figs. 3, 4, 25, 26 and 34 of Kemmochi '706 meets this limitations; see paragraphs 0004+ and 0093+ of Kemmochi '706), and a low noise amplifier (i.e., noted the use of LNA for the receiving means in mobile communication devices as shown in Figs. 36-38 of Kemmochi '706) coupled to an output of the band pass filter (i.e., as shown in Figs. 36-37, the LNA is normally coupled to the band passed filter 'fg2', thus, the BPF 'fg2' as shown in Fig. 34 must be connected to the LNA circuit), wherein each of the phase shifting circuits (i.e., noted the phase shifting circuit LD4 as shown in Figs. 4, 25, 26 and 34) is impedance transforming (i.e., see Fig. 7 and paragraphs 0086-0089).

Regarding claim 3, Kemmochi '706 discloses in that each of the band pass filters (i.e., noted the BPF labeled as "fg2/fp2" as shown in Figs. 4 and 34 of Kemmochi '706) is a SAW filter (i.e., see paragraphs 0093+).

Regarding claim 5, Kemmochi '706 discloses in that the branching circuit is coupled to the terminal (antenna as shown in Figs. 3, 4, 25, 26 and 34) by way of a length of transmission line (i.e., noted the use of node IP as shown in Figs. 4 and 26 for coupling the branching circuits and antenna via a length of transmission lines as shown in Figs. 4 and 26).

Regarding claim 6, Kemmochi '706 discloses by the transmitting branch having a series switch (i.e., noted the series switch for transmitting GSM/PCS signals to the antenna as shown in Figs. 26 and 34) coupled to the terminal (i.e., Antenna) and the branching circuit having a shunt switch coupled to an end of the transmission line remote from the terminal (i.e., noted the shunt switch "Dr/Pr" coupled to an end of the transmission line as shown in Fig. 26, which is remote to the antenna).

Regarding claim 7, Kemmochi '706 discloses in that a duplexer (i.e., noted the "DP" as shown in Figs. 3, 26 and 34) is coupled to the terminal (i.e., the Antenna), in that the transmitting and the branching circuit are coupled to a port of the duplexer for passing signals having frequencies lying in a first bandwidth and in that a further port is coupled to a further branch for processing signals having frequencies lying in a second bandwidth (i.e., as shown in Fig. 34, the antenna is coupled the duplexer having a changer-over switch SW to a GSM/PCS transmitter front end and to a branching circuit having branches for GSM receiver front end and PCS receiver front end, respectively).

Regarding claim 8, Kemmochi '706 discloses a multi-mode radio comprising signal propagating and receiving means (i.e., noted the mobile communication devices having an antenna as shown in Figs. 3, 4, 25, 26, 34 and 36, respectively), means for modulating signals to be transmitted, means for demodulating received signals (i.e., noted that the RF signals received by the multi-band mobile communication device as shown in Figs. 3, 4, 25, 26, 34 and 36 performs modulation/demodulation of RF signals during a transmitting/receiving process) and a multi-mode radio module (i.e., see Figs. 4, 25, 26, and 34; see paragraphs 0005+ and 0166+) comprising a transmitting branch (i.e., noted the transmitting branch for EGSM and GSM/PCS

Art Unit: 2618

bands as shown in Figs. 4, 25, 26 and 34) coupled to the signal propagating and receiving means (i.e., noted the connection of antenna to the transmission lines for EGSM and GSM/PCS), the modulating means being coupled to a signal input of the transmitting branch (i.e., see noted the modulation of RF signals before transmission as shown in Fig. 34 & 36-38), and a branching circuit coupled to the signal propagating and receiving means (i.e., noted the connection of antenna to the transmission lines for EGSM and GSM/PCS),

the branching circuit comprising at least a first and a second branch for receiving signals in first and second frequency bands, respectively, each of the first and second branches comprising, respectively (i.e., noted the first and second branch for receiving EGSM900 and GSM1800/PCS frequency bands as shown in Figs. 3, 4, 25, 26 and 34), a phase shifting circuit (i.e., noted the use of Phase shift circuit LG4, LD4, and Phase shifter 1 & 2 as shown in Figs. 4, 26 and 34 respectively), a band pass filter (i.e., noted the SAW/fg BPF as shown in Figs. 3, 4, 25, 26 and 34 respectively) coupled to the phase shifting circuit (i.e., noted LD4, LG4 or Phase shifter 1 & 2 of Figs. 4, 26 and 34), the bandwidth of the filter being selected to pass a wanted signal in one of the first and second frequency bands but reject an unwanted signal in the other of the second and first frequency bands (i.e., noted that the band passed SAW filter as shown in Figs. 3, 4, 25, 26 and 34 of Kemmochi '706 meets this limitations; see paragraphs 0004+ and 0093+ of Kemmochi '706), and a low noise amplifier (i.e., noted the use of LNA for the receiving means in mobile communication devices as shown in Figs. 36-38 of Kemmochi '706) coupled to an output of the band pass filter (i.e., as shown in Figs. 36-37, the LNA is normally coupled to the band passed filter 'fg2', thus, the BPF 'fg2' as shown in Fig. 34 must be connected to the LNA circuit), the respective LANs being coupled to the demodulating means



Art Unit: 2618

(i.e., as shown in Figs. 34 and 36, the receiving output of the PCS and GSM has to coupled to the respectively LANs, and the output of the LANs is normally coupled to the RF demodulator/mixer of the receiver of the mobile communication device) wherein each of the phase shifting circuits (i.e., noted the phase shifting circuit LD4 as shown in Figs. 4, 25, 26 and 34) is impedance transforming (i.e., see Fig. 7 and paragraphs 0086-0089).

Regarding claim 10, Kemmochi '706 discloses by the transmitting branch having a series switch (i.e., noted the series switch for transmitting GSM/PCS signals to the antenna as shown in Figs. 26 and 34) coupled to the terminal (Antenna) and the branching circuit having a shunt switch coupled to one end of a quarter wavelength transmission line, the other end of the transmission line being coupled to the terminal (i.e., noted the shunt switch "Dr/Pr" coupled to and end of the quarter wavelength transmission line as shown in Fig. 26, and the other end of the transmission is coupled to the antenna as claimed).

Regarding claim 11, Kemmochi '706 discloses in that a duplexer (i.e., noted the Duplexer "DP" as shown in Figs. 3 and 34) is coupled to the terminal (i.e., Antenna), in that the transmitting and the branching circuit are coupled to a port of the duplexer for passing signals having frequencies lying in a first bandwidth and in that a further port is coupled to a further branch for processing signals having frequencies lying in a second bandwidth (i.e., noted the different frequency bandwidths coupled to the duplexer "DP" as shown in Figs. 26 and 34 respectively).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 2 rejected under 35 U.S.C. 103(a) as being unpatentable over Kemmochi '706 in view of Ella et al.(US 6,751,470).

Regarding claim 2, it is noted that Kemmochi '706 does not explicitly state the use of the BAW band pass filter.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Ella '470. In particular, Ella '470 teaches the use of BAW band pass filter in the multi-band mobile communication for the purpose of achieving superior power handing

Art Unit: 2618

capability has been known to one of the ordinary skilled in the art at the time of the invention was made (i.e., see col. 7, lines 5-15).

In view of the above, having the multi-band mobile communication system of Kemmochi '706 and then given the well-established teaching of Ella '470, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to use a BAW type band pass filters as taught by Ella '470, since Ella '470 states in col. 7, lines 5-10 that such a modification would provide superior power handling capability to the mobile communication system.

11. Claims 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kemmochi '706 in view of Hikita et al. (U.S. 6,525,624).

Regarding claim 4, it is note that although Kemmochi '706 show the use of the phase shifting circuit (i.e., noted the phase shift circuits as shown in Figs. 4, 25, 26 and 34 of Kemmochi '706) to provide a predetermined impedance transformation between that of the signal propagating and receiving means (i.e., antenna) and the respective band pass filter (i.e., noted the SAW filters as shown in Figs. 4, 25, 26 and 34 of Kemmochi '706; and also see paragraphs 0086-0089), Kemmochi '706 does not explicitly show that each of the phase shifting circuit, (PS1,PS2) comprising a series capacitance and a shunt inductance as recited in present claimed invention.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Hikita '624. In particular, Hikita '624 teaches the use of the phase shifting circuits (i.e., see Fig. 4, the element 14) comprises a series capacitance and a shunt inductance (i.e., noted

Art Unit: 2618

the series capacitance 26 and shunt inductance 27 as shown in Fig. 12D), the value of the series capacitor (26) and the shunt inductance (27) being such as to provide a predetermined impedance transformation between that of the signal propagating and receiving means (i.e., the antenna as shown in Fig. 4) and the respective band pass filter (i.e., noted the SAW filter as shown in Fig. 4; see col. 10, lines 40+ and col. 11, lines 15+).

In view of the above, having the multi-band mobile communication system of Kemmochi '706 and then given the well-established teaching of Hikita '624, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the phase shift circuit of Kemmochi '706 as taught by Hikita '624, since Hikita '624 states in col. 3, lines 5+ that such a modification would provide an antenna duplexer which is micro-miniaturized and reduced in weight, thus, the miniaturization of a radio terminal can be realized.

Regarding claim 9, please see the Examiner's comment with respect to claim 4 as discussed above.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Following references are related to the present claimed invention:

US 20050048927A1

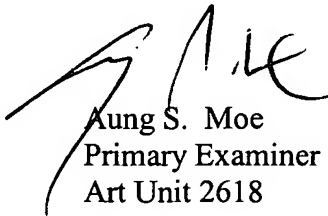
US 20050245201A1

Art Unit: 2618

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aung S. Moe whose telephone number is 571-272-7314. The examiner can normally be reached on Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Aung S. Moe  
Primary Examiner  
Art Unit 2618

A. Moe  
June 24, 2006